

FIG. 1

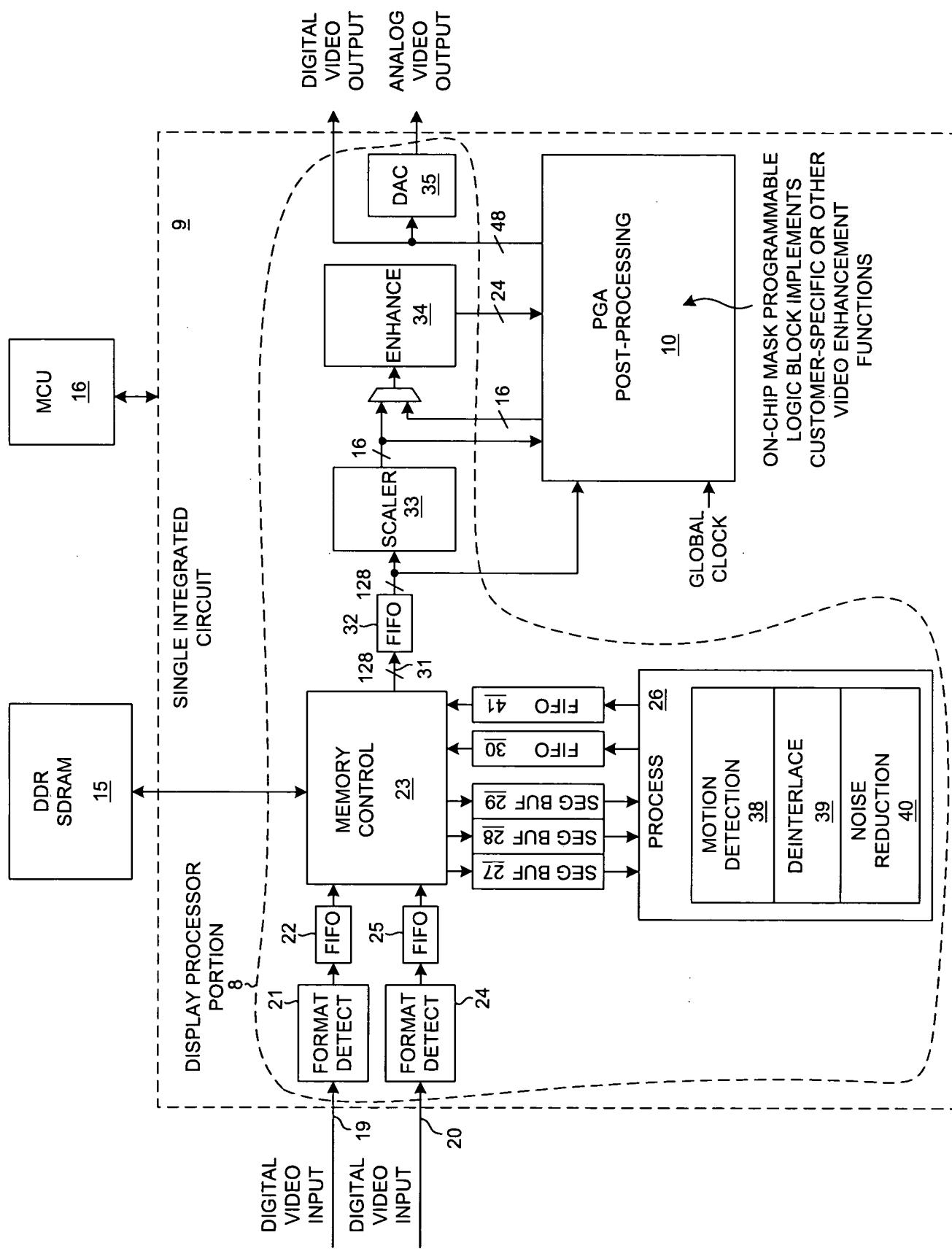


FIG. 2

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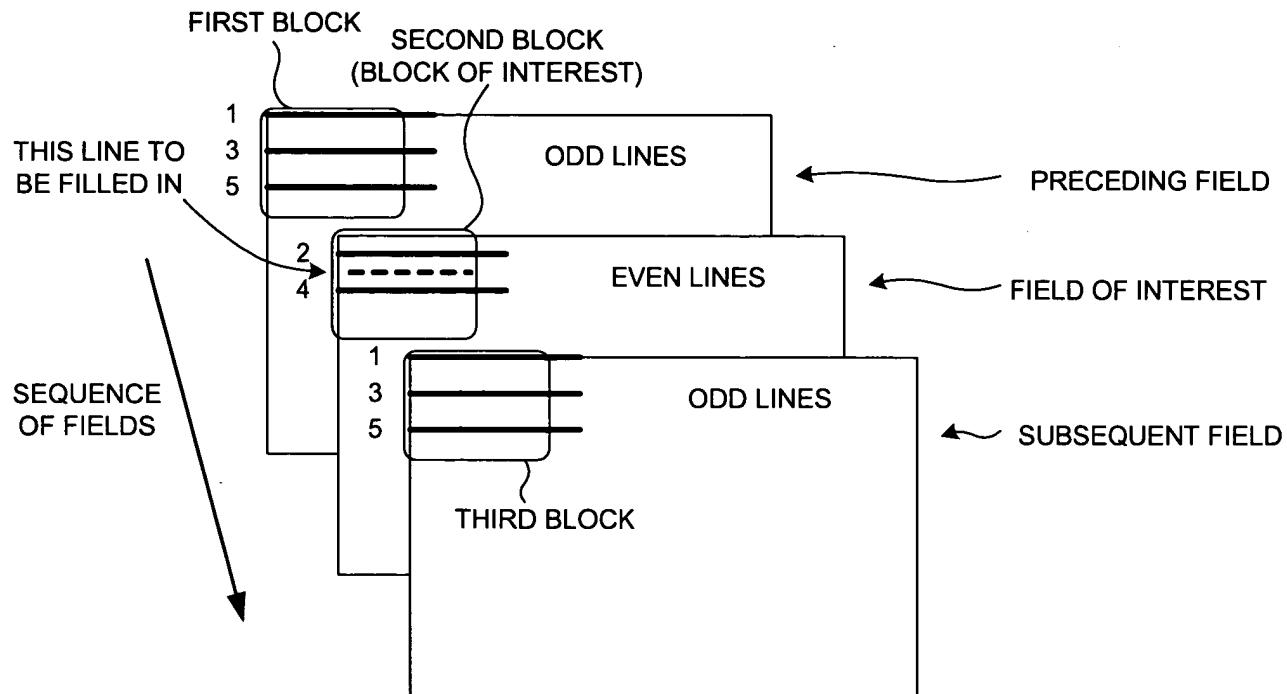


FIG. 3

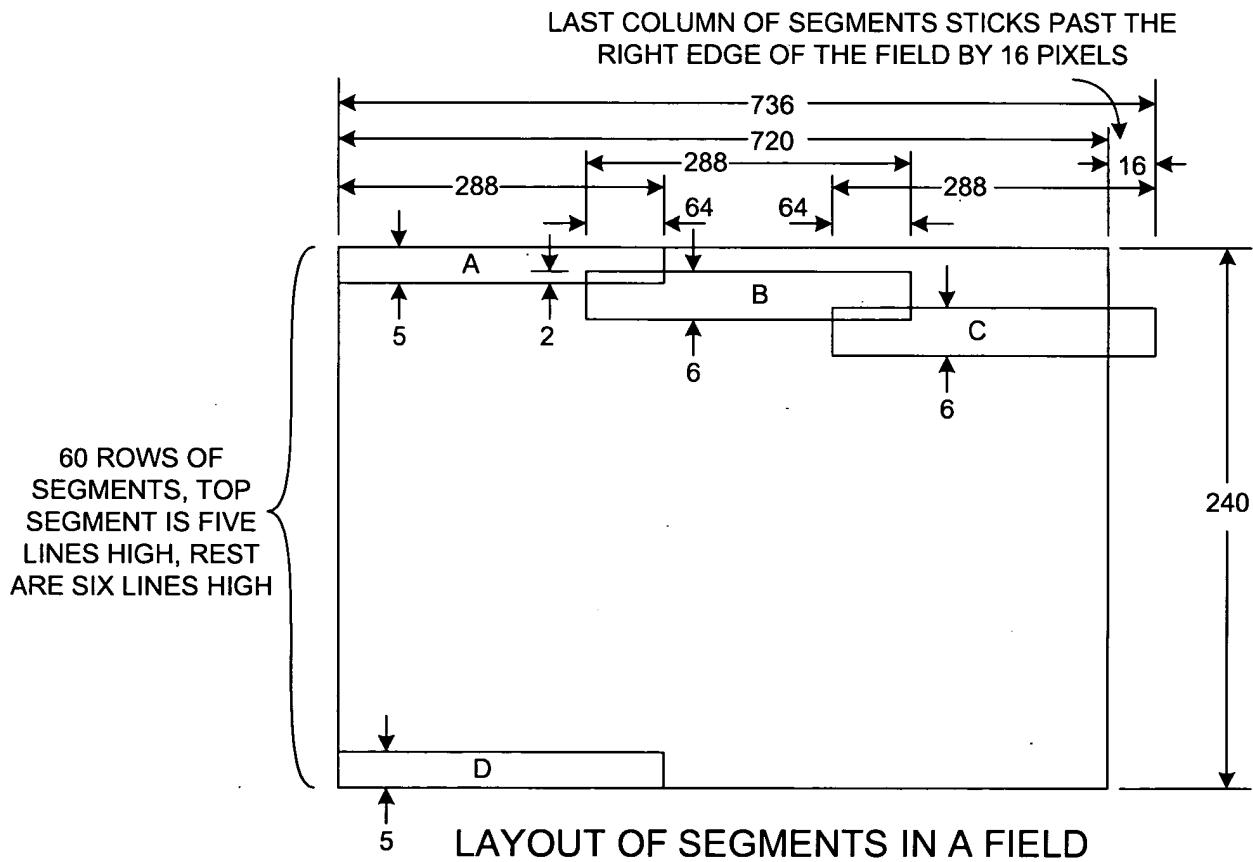
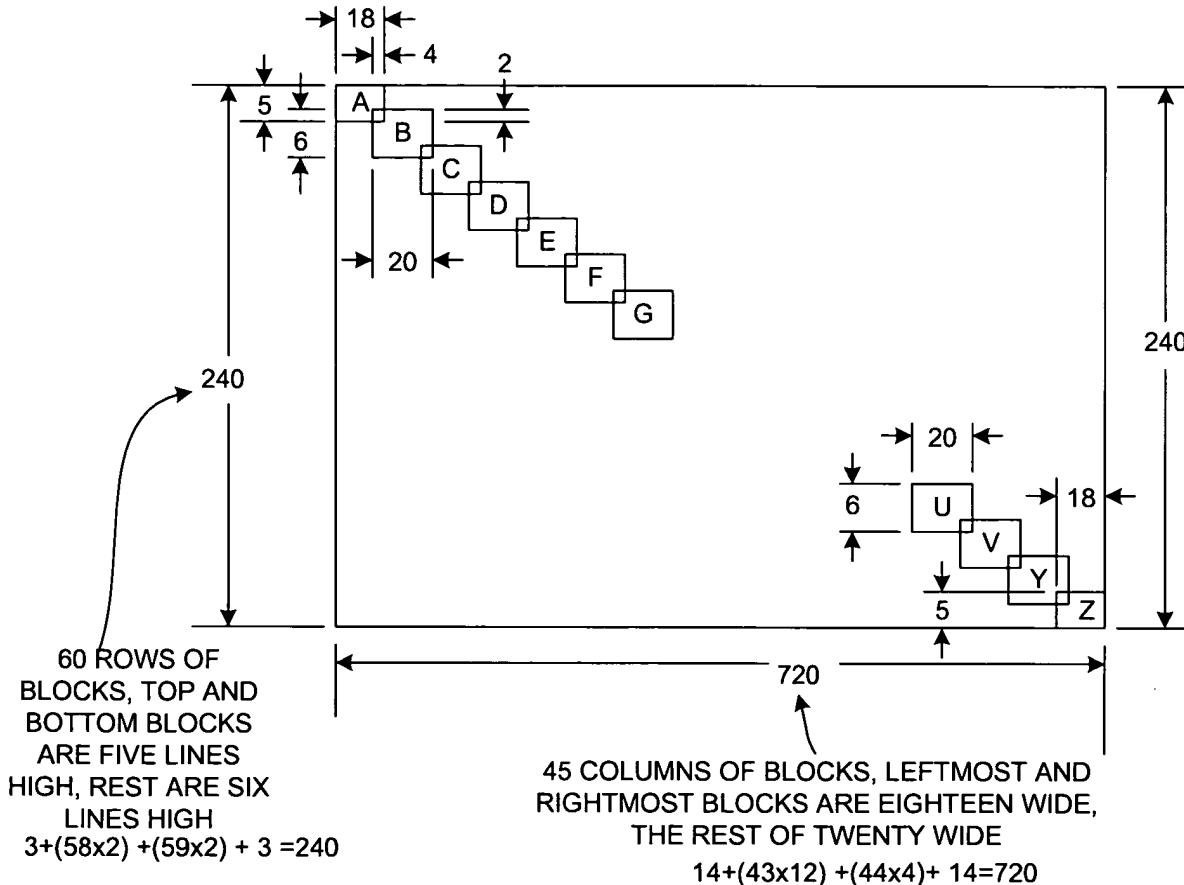


FIG. 4

SEGMENT LOADING SEQUENCE

FIG. 5



LAYOUT OF BLOCKS IN A FIELD

FIG. 6

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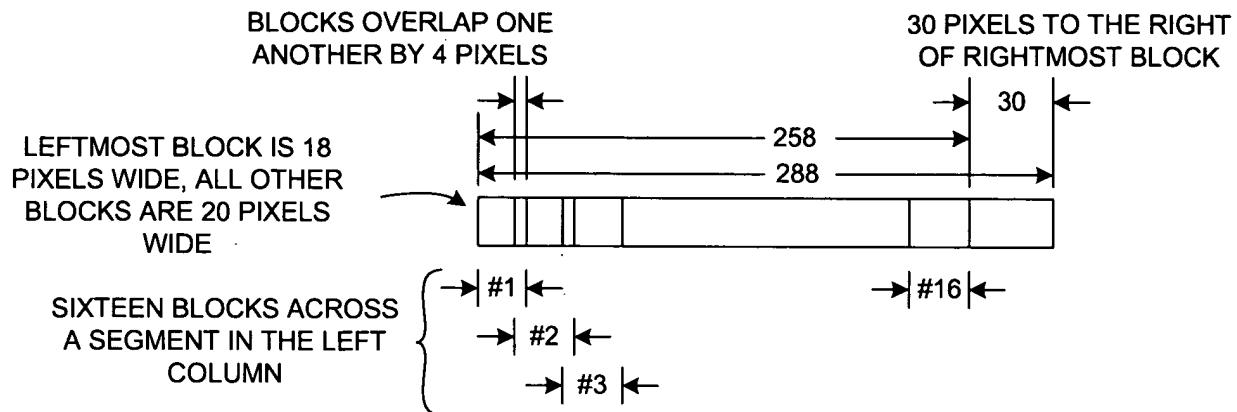


FIG. 7A

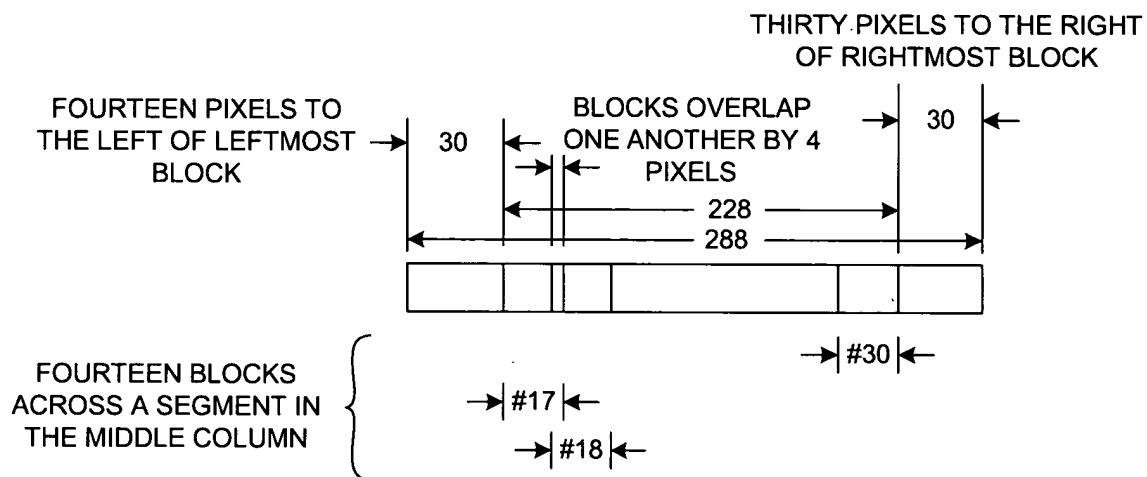
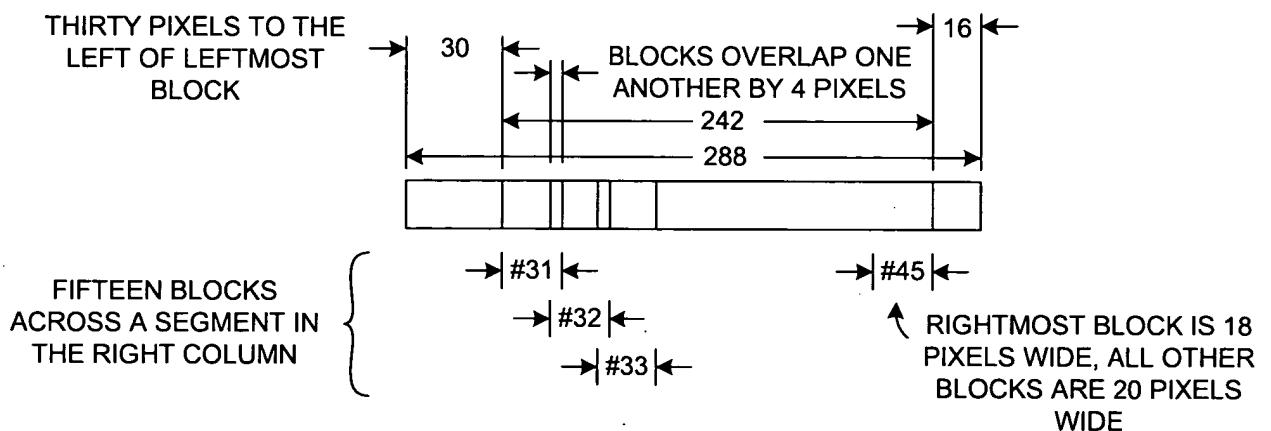


FIG. 7B



BLOCKS IN A SEGMENT IN THE RIGHT COLUMN

FIG. 7C

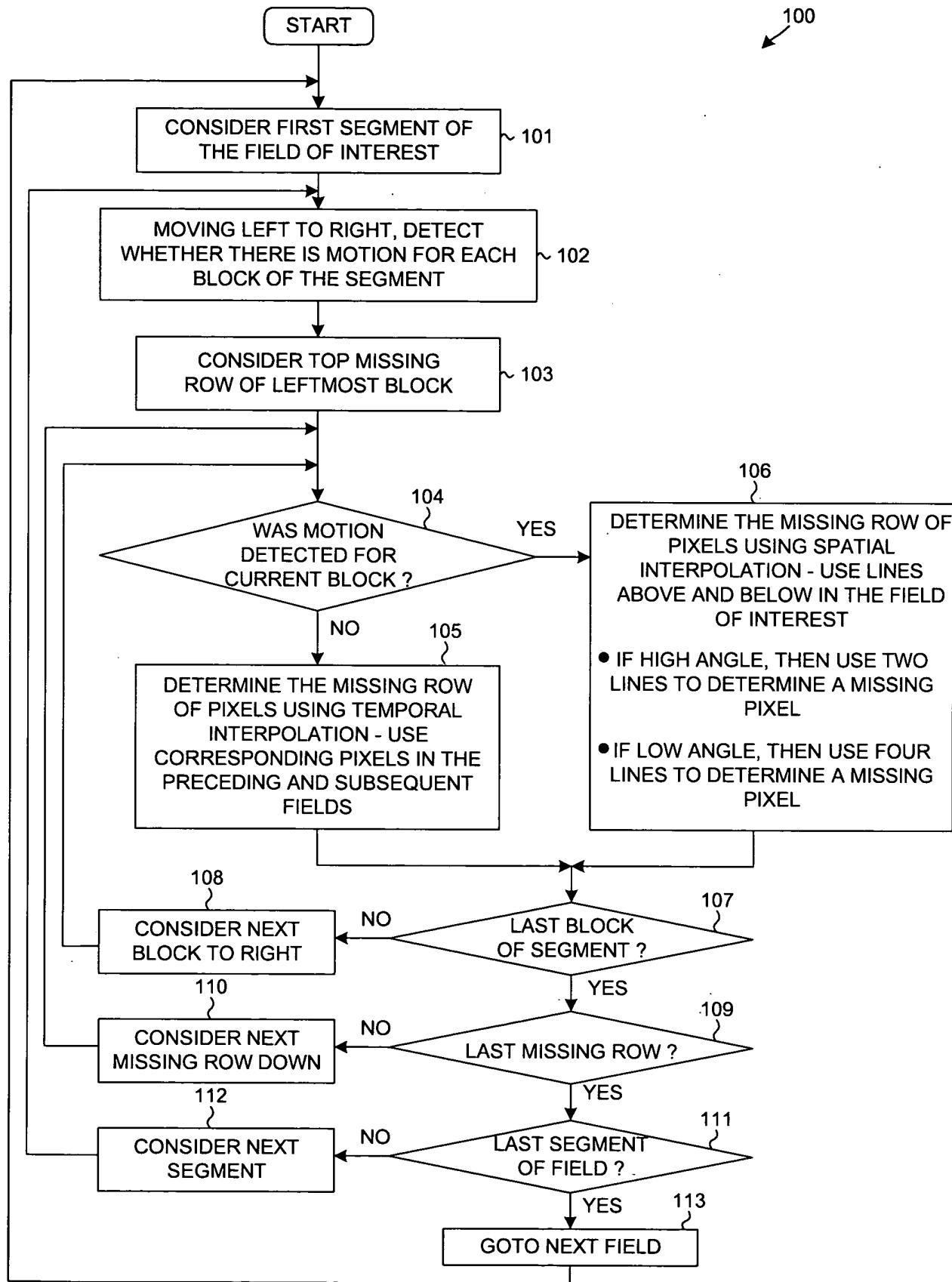


FIG. 8

IN A BLOCK:

$P_{i,j}$ IS A LUMINANCE VALUE AT THE i th ROW AND j th COLUMN IN A BLOCK OF FIELD (t-1)

$Q_{i,j}$ IS A LUMINANCE VALUE AT THE i th ROW AND j th COLUMN IN THE BLOCK AT THE SAME POSITION OF FIELD (t+1)

$$i \in [0, \text{BLOCK_WIDTH}]$$

$$j \in [0, \text{BLOCK_HEIGHT}]$$

$$\text{SUM} = \sum_{j=0}^{\text{BLOCK_HEIGHT} - 1} \sum_{i=0}^{\text{BLOCK_WIDTH} - 1} \frac{(P_{i,j} + Q_{i,j})}{2}$$

$$\text{DIFF} = \sum_{j=0}^{\text{BLOCK_HEIGHT}} \sum_{i=0}^{\text{BLOCK_WIDTH}} |P_{i,j} - Q_{i,j}|$$

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IF ( DIFF > SUM * THRESHOLD_RATIO )
  THEN { THERE IS MOTION ;
    MOTION_SIGNAL = 1 ;
    USE SPATIAL INTERPOLATION RESULTS ; }
  ELSE { THERE IS NO MOTION ;
    MOTION_SIGNAL = 0 ;
    INTERPOLATE USING THE AVERAGE OF FIELD(t-1) AND FIELD(t+1) ; }
FINAL_RESULT = MOTION_SIGNAL | CORRESPONDENT MOTION HISTORY BIT ;
CORRESPONDENT MOTION HISTORY BIT = MOTION_SIGNAL ;

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BLOCK-BASED MOTION DETECTION

FIG. 9

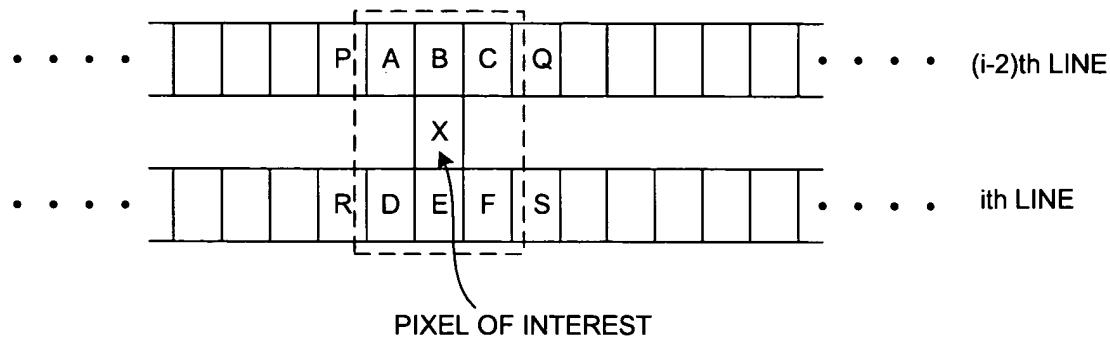


FIG. 10

$$\text{VERT_GRAD} = \frac{A - D + 2 * (B - E) + C - F}{4}$$

$$\text{HORI_GRAD} = \frac{A - C + D - F}{2}$$

IF $(| \text{VERT_GRAD} | + | \text{HORI_GRAD} | < \text{THRESHOLD})$ THEN

$$x_L = \frac{B + E}{2} ; \quad x_c = \frac{B + E}{2}$$

ELSE IF $\left\{ \begin{array}{l} \left| \text{VERT_GRAD} \right| > \tan(68^\circ) \\ \left| \text{HORI_GRAD} \right| \end{array} \right\}$ OR $\left\{ \begin{array}{l} \left| \text{VERT_GRAD} \right| < \tan(23^\circ) \\ \left| \text{HORI_GRAD} \right| \end{array} \right\}$ THEN

$$x_L = \frac{B + E}{2} , \quad x_c = \frac{B + E}{2} ;$$

WHERE

ELSE IF $\left\{ \frac{\text{VERT_GRAD}}{\text{HORI_GRAD}} < 0 \right\}$ THEN (LEFT TILT): x_L IS LUMINANCE
 x_c IS CHROMINANCE

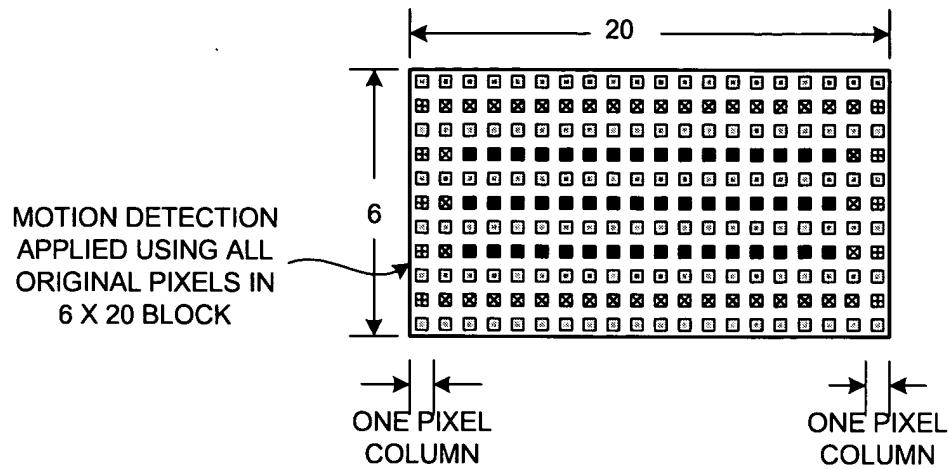
$$x_L = \frac{A + F}{2} , \quad x_c = \frac{P + S}{2} ;$$

ELSE (RIGHT TILT):

$$x_L = \frac{D + C}{2} , \quad x_c = \frac{Q + R}{2} ;$$

HIGH ANGLE SPATIAL INTERPOLATION

FIG. 11



SYMBOL	DESCRIPTION
☒	PIXEL TO BE GENERATED - HIGH ANGLE SPATIAL INTERPOLATION CAN BE APPLIED, BUT LOW ANGLE SPATIAL INTERPOLATION CANNOT.
☒	PIXEL TO BE GENERATED - NEITHER HIGH ANGLE NOR LOW ANGLE SPATIAL INTERPOLATION CAN BE APPLIED - USE TEMPORAL INTERPOLATION.
■	PIXEL TO BE GENERATED - LOW OR HIGH ANGLE SPATIAL INTERPOLATION CAN BE APPLIED.
□	ORIGINAL PIXEL.

FIG. 12